RTK DB5

MTL intrinsically safe sounder type DB-5

Description

The RTK DB5 sounder is a strong, lightweight warning sounder, CENELEC certified to Ex II 1G EExia IIC T4 (Ta -20°C to 55°C) with 26 user-selectable tones, and an output level of over 100dB.

Also available certified to CSA, FM standards and for use in mines.

Connection details

1 +ve common
2 +ve common
3 -ve 1st tone
4 -ve 1st tone
5 -ve 2nd tone
6 -ve 2nd tone

To generate the first tone simply connect supply +ve to terminals 1 or 2, and supply –ve to terminals 3 or 4. To generate the second tone simply connect supply +ve to terminals 1 or 2, and supply –ve to terminals 5 or 6. Note, if +ve is connected to 2nd sound, it will permanently damage the sounder.

Each terminal is duplicated and internally connected to allow for ease of connecting subsequent horns or end-of-line (EOL) resistors.

Installation

Mounting

The sounder should be positioned using the two available fixing holes in the base. It is recommended that stainless steel nuts and bolts be used if the environment is corrosive.

The sounder will operate in any attitude, from horizontal to vertical. However, it is important to note that the alignment and mounting of the sounder should ensure that:

- Dust or debris cannot lodge in the re-entrant horn. Water from hose's, jets or rain cannot settle in the re-entrant horn.
- The sounder should be installed in accordance with certified parameters.

Removing and replacing the cover

Remove the cover/horn of the sounder by rotating the top of the sounder anti-clockwise, and pulling the cover/horn gently away from the base. Replacing the cover/horn is a reverse process of the above, but care should be taken to ensure that the seal is securely located in its groove during re-assembly.

Wiring

Cable termination should be in accordance with specifications applying to the application. It is recommended that all cables and cores should be fully identified. Ensure that only the correct glands are used and that the assembly is shrouded. Refer to the connection details below.

The twinned-pair inlet terminals and deep base are convenient for looping to other circuits or for siting end-of-line resistors. The base has three knockouts, two on the side and one on the base, to accommodate a 20mm conduit or M20 cable glands. The units are polarised and a chain may be fitted with an "end of line" resistor for reverse polarity testing and to permit line monitoring.

Recommended cable

0.5 to 2.5mm^2 with earthed screen and insulating sheath. Cable parameters are determined by the output parameters of the interface selected.

Safe area use

In safe areas, the sounders can be powered directly from 24VDC/12VDC. The absence of any current limitation increases the output by approx 4dB.

Sound

The sound level for each of the individual tones in shown in Table 2. This is assuming one DB5 set at full volume, driven from a suitable IS interface. Where two sounders are driven from the same IS source, the output will decrease by 1.5dB. Three sounders will decrease by 2.2dB. A single turn potentiometer is provided to reduce the volume level by a minimum of 15dB.

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: rtkenquiry@eaton.com
www.mtl-inst.com

Publication No. INS DB5 Rev 9
October 2016

Electrostatic risk

By virtue of it's shape, design and position of use, it is not considered to be an electrostatic risk, however, the apparatus must not be installed in a position where it may be subjected to an excessive air flow that might cause an electrostatic build-up.

Intrinsically safe specification

Certification
Certified by BASEEFA to Ex II 1G, EEx ia IIC T4 (Ta-20°C to 55°C) to CENELEC standards.
Certificate No. BAS00ATEX1259

Location
IIC T4, installation can be in any zone.

Safety parameters
DB5:
Ui = 28V, Ii = 28mA, Pi = 0.81W
Ci = 0, Li = 20mH + 1000Ω
The DB5 sounder has an internal resistance Ri of 1000Ω which ensures that the input current limit Ii for inductive safety is not exceeded

DB5-12:
Ui = 15.7V, Ii = 37mA, Pi = 0.56W
Ci = 0, Li = 20mH + 325Ω
The DB5-12 sounder has an internal resistance Ri of 325Ω which ensures that the input current limit Ii for inductive safety is not exceeded

Supply
DB5:
Min/max at terminals = 15-28VDC
Current (through interface) = 14mA

DB5-12:
Min/max at terminals = 9.6-15VDC
Current (through interface) = 12mA

EMC compliance
Immunity to EN50082-2:1995
Emissions to EN50081-2:1994

Terminals
For conductors up to 2.5mm^2

DB5:
Zener barrier interfaces
Suitable models are: 24v version MTL7728+, 12v version MTL7715+

Galvanic isoloator interfaces
Suitable models are: MTL5025

DB5-12:
Zener barrier interfaces
Suitable model: MTL7715+

Weight
300g

Environment
Operating temperature-20 to +55°C
Storage temperature-40 to +80°C
Humidity 5-95% RH, non-condensing
Protection IP65

Construction
ABS enclosure with encapsulated electronic module.
Colour red.

Mining certification

Certification
Certified by EECS to Ex I M1 EEx ia 1
Certificate No: MECS01ATEX4260

Intrinsically safe parameters
DB-5-M-012:
Ui = 14.4V, Uo = 14.4V
Ci = 0, Li = 0

FM certification

Certification
Intrinsically Safe for Class I, Division 1, Groups A,B,C and D.

Certificate No: J.I 3008604

Entity parameters for DB5 (24V version):
Vmax = 28VDC, Imax = 147mA, Pmax = 810mW,
Ci = 0, Li = 0

Entity parameters for DB5-12 (12V version):
Vmax = 15.7VDC, Imax = 150mA, Pmax = 560mW,
Ci = 0, Li = 0

CSA certification

Certification
Certified by CSA to standard numbers 0, 0.4, 0.5, 25, 30, 205. Class 1 Groups A,B,C and D

Certificate No: 79122

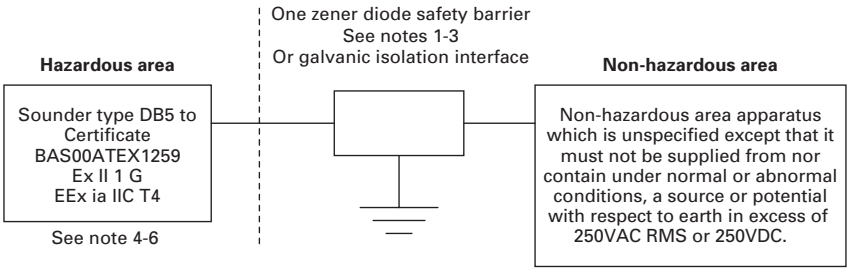
Supply
Min/max at terminals = 15-28VDC
Current (through interface) = 14mA

Environment
Operating temperature-20 to +55°C
Storage temperature-40 to +80°C
Humidity 5-95% RH, non-condensing
Protection IP65

Zener barrier interfaces
Contact Eaton for suitable MTL models

Galvanic isoloator interfaces
Contact Eaton for suitable MTL models

Installation diagram



Notes:

1. Any shunt zener diode safety barrier or galvanic isolator, certified by an EEC approved body to [EEx ia] IIC, having the following maximum output parameters:
   DB5-24:
   Uo = 28V, Io = 147mA, Po = 0.81W
   DB5-12:
   Uo = 15.7V, Io = 150mA, Po = 0.56W

2. Other barriers having lower values than these are permitted.

3. In any safety barrier used the output current must be limited by a resistor "R" such that:
   Io = Uo / R

4. The capacitance and inductance of the hazardous area cable must not exceed the values quoted in the certificate for the particular barrier/isolator used. See table 1. If the inductance to resistance ratio (L/R) of the cable is higher than the ratio of the barrier/isolator, the maximum length that can be connected to the interface has to be calculated.

5. The installation must comply with the appropriate national installation requirements e.g. in the U.K. BSEN 60079-14:1997.

6. The circuit in the hazardous area must be capable of withstanding 500V RMS to earth or frame for one minute when using zener diode safety barriers.

Cable parameters

Group	Capacitance µF	Inductance µH	L/R ratio µH/Ω
Typical 28V / 300Ω zener barrier			
IIC	0.083	4.2	55
IIB	0.65	12.6	165
IIA	2.15	33.6	440

Table 1

Operating instructions

Tone selection

The required tone should be selected by referring to table 2 below. The 5-way DIL switches on the PCB should then be set to the code as shown (1 being equivalent to the on position, 0 being equivalent to the off position).

Sound level

The output sound level shown is for a sounder powered from an RTK WIS1211 interface or from an RTK S951 barrier, fed by 24VDC.

Tone no	Tone frequency	2nd tone	DIL switch setting 12345	Tone description	Level dBA
1	Alt Tones 800/970 Hz at ¼ sec	14	11111		88
2	Sweeping 800/970 Hz at 7 Hz	14	11110		91
3	Sweeping 800/970 Hz at 1 Hz	14	11101		94
4	Continuous at 2850 Hz	14	11100	HF 2nd tone	102
5	Sweeping 2400-2850 Hz at 7 Hz	4	11011		100
6	Sweeping 2400-2850 Hz at 1 Hz	4	11010		103
7	Slow Whoop	14	11001		94
8	Sweep 1200-500 Hz at 1Hz	14	11000		91
9	All tones 2400-2850 Hz at 2 Hz	4	10111		100
10	Int tone of 970 Hz at 1 Hz	14	10110		83
11	Alt tones 800-970 Hz at 7/8 Hz	14	10101		87
12	Int tone at 2850 Hz at 1 Hz	4	10100		100
13	970 Hz at ¼ sec on 1 sec off	14	10011		83
14	Continuous at 970 Hz	14	10010	LF 2nd tone	85
15	554 Hz for 100mS/440 Hz for 400mS	14	10001	French Fire	91
16	Int 660 Hz 150mS on 150mS off	14	10000	Swedish Fire	86
17	Int 660 Hz 1.8 sec on 1.8 sec off	14	01111	Swedish Fire	87
18	Int 660 Hz 6.5 sec on 13 sec off	14	01110	Swedish Fire	88
19	Continuous 660 Hz	14	01101	Swedish Fire	87
20	Alt 554-440 Hz at 1 Hz	14	01100	Swedish Fire	93
21	Int 660 Hz at 7/8 Hz	14	01011	Swedish Fire	88
22	Int 2850 Hz 150mS on 100mS off	14	01010	Pelican Crossing	100
23	Sweep 800-970 Hz at 50Hz	14	01001	Low Freq Buzz	92
24	Sweep 2400-2850 Hz at 50 Hz	14	01000	High Freq Buzz	99
25	3 970 Hz pulses 0.5 on/0.5 off, 1.5 off	14	00111		83
26	3 2850 Hz pulses 0.5 on/0.5 off, 1.5 off	14	00110		102

Table 2

Maintenance

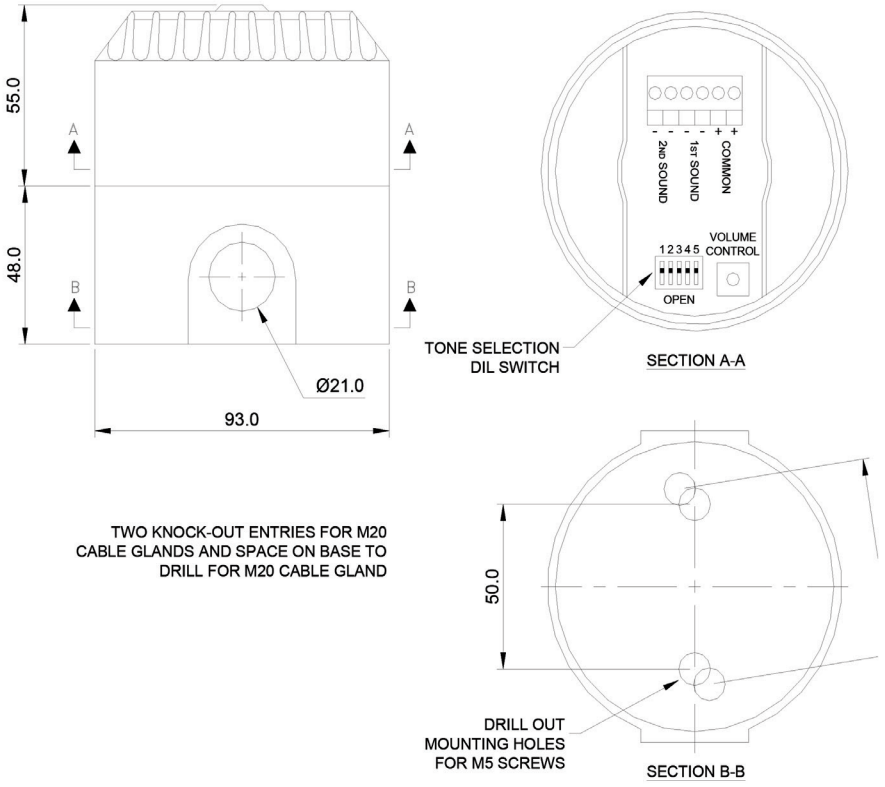
During the life of the sounder, it should require little or no maintenance. However, if abnormal or unusual environmental conditions occur or due to plant damage or accident etc, then a visual inspection is recommended.

Approvals

Country and authority	Standard	Certificate number	Approval for
Canada CSA	C22.2 No's 0, 0.4, 0.5, 25, 30, 205	79122	Class 1 Groups A-D
FM certificate	Class 3600 and 3610	J.I. 3008604	Class 1, Div 1 Groups A-D
UK HSE(M)	EN50014 EN50020 EN50303	MECS01ATEX4260	Ex I M1 EEx ia I
UK BASEEFA to CENELEC	EN50014 EN50020 EN50284	BAS00ATEX1259	Ex II 1 G EEx ia IIC T4

Certificates available on request.

Overall drawing



Other MTL process alarm equipment products

Eaton produce a range of complementary MTL products for many applications in the industrial control and instrumentation field for both safe and hazardous areas, as listed below.

All standard products come with a 5 year warranty from this ISO9001:2008 approved company:

- Alarm annunciators
- Remote logic alarm systems
- Alarm management software and touch-screen annunciators
- Lamp-boxes and display facias
- Sequence of event recorders
- Universal panel meters and large displays
- Power supplies

A complete range of hazardous area products including:

- Intrinsically safe alarm annunciators
- Explosion proof alarm annunciators
- Intrinsically safe LED beacons
- Intrinsically safe light towers
- Intrinsically safe LED indicators
- Intrinsically safe Illuminated switches and pushbuttons
- Intrinsically safe sounders
- Intrinsically safe relays

Please contact our sales office to obtain our latest brochure.

Declaration of Conformity

A printed version of the Declaration of Conformity has been provided separately within the original shipment of goods. However, you can find a copy of the latest version at

http://www.mtl-inst.com/certificates

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: rtkenquiry@eaton.com
www.mtl-inst.com

Publication No. INS DB5 Rev 9 121016
October 2016

EUROPE (EMEA):
+44 (0)1582 723633
mtlenquiry@eaton.com

THE AMERICAS:
+1 800 835 7075
mtl-us-info@eaton.com

ASIA-PACIFIC:
+65 6645 9864 / 6645 9865
sales.mtlsing@eaton.com